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UM Native American Center rising at UM

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UM NATIVE AMERICAN CENTER RISING AT UM

MISSOULA –

By Louise Lakier
UM Facilities Services Project Manager

Before there were skyscrapers, supermarkets and strip malls, structures were built immersed in their natural environments. Indigenous cultures lived on the land and built shelters directly responding to their microclimates. Siting a building effectively to receive the warmth of the sun or the cooling of the breezes and constructing a building from durable, impervious materials to withstand the elements were simple survival techniques. When the time came to move on, materials the shelters were constructed from were returned to nature or often transported for reuse to the next location. Shelter was specific to lifestyle and climate. The connection to the outdoors was intrinsic to building.

Native Americans inhabited a wide range of climates across America. Their culture, beliefs and traditions became deeply rooted in nature. Their building materials were found locally and varied based on culture, climate and tradition.

In the Southwest, adobe cliff houses were built from a mixture of clay and straw for farming communities, while on the western plains and plateaus, earthen houses made from wood and covered with domed mounds of earth served as permanent dwellings. The Pacific Northwest saw plank houses consisting of long planks of cedar lashed to wooden frames. The woodland

regions provided perfect seasonal homes, or wigwams, built with wooden frames and covered in woven mats or sheets of birch bark. Tepees made from wooden frames covered with buffalo hide were easily transportable on the Plains, as well as temporary brush shelters made from simple wood frames covered with brush and leaves. These structures are, in a sense, the ultimate "green architecture" – minimally impacting their environment.

By contrast, the impact on the environment from contemporary building practices has been substantial. Our resources have diminished, and our municipalities lack the infrastructure to keep up with our waste. Buildings annually consume more than 30 percent of the total energy and more than 60 percent of the electricity used in the United States.

A typical North American commercial construction project generates up to 2.5 pounds of solid waste per square foot of completed floor space. As cities develop, open spaces and biologically diverse habitats shift to impervious hardscape. Water runoff increases and overflows the storm sewers. Concrete and asphalt absorb and re-release heat, creating urban heat islands. Urban sprawl decentralizes communities, creates automobile-dependent cultures and inefficient utility and waste systems.

Today, design and building practices are being re-evaluated and restructured to include green building strategies. By reintegrating our buildings into nature, managing their energy and water use, recycling construction waste and selecting materials with the environment in mind, these impacts can be reduced, monitored and potentially controlled.

The Native American Center will be the first building on The University of Montana campus designed to nationally recognized Green Building Standards. The project is registered

with the U.S. Green Building Council, and UM intends to pursue certification under USGBC's Leadership in Energy and Environmental Design program.

The LEED Green Building Rating System is the nationally accepted benchmark for the design, construction and operation of high-performance green buildings. The LEED rating system includes four levels of certification: certified, silver, gold and platinum.

The LEED rating system provides a checklist for a building to reach a recognized level of sustainable construction. Green strategies often are integrated into the design and construction of a building that go beyond the attainable points in LEED.

In response to growing concerns about the impacts to global warming, UM President George Dennison became a charter signatory to the American College and University President's Climate Commitment in February 2007. In signing this commitment, Dennison pledged to make UM more sustainable and to "ultimately neutralize greenhouse gas emissions on campus."

He also is a signatory of the Tailloires Declaration, a 10-point action plan for incorporating sustainability and environmental literacy in teaching, research, operations and outreach at colleges and universities. Dennison has committed to pursuing LEED silver certification for all new campus buildings.

UM's new Native American Center also will be the first off-reservation building in the state of Montana designed to symbolically represent Native culture and the first intertribal center designed to represent the 12 tribes of Montana. Construction started in November 2008 and is scheduled for completion in January 2010.

The building will be sited in the heart of the campus on one of the last remaining sites surrounding the historic Oval, a park-like clearing. The building is designed to provide a home for the University's growing Department of Native American Studies. The building was designed by a Crow architect Daniel Glenn of Glenn and Glenn Architects in collaboration with representatives from each of Montana's 12 tribes.

Glenn's work with tribes has received growing recognition, including his design of the Crow Tribe's Little Big Horn College – featured in the documentary film "Aboriginal Architecture/Living Architecture." His design of a sustainable home for Navajo elders was selected for publication in Global Green's Blueprint for Affordable Green Housing.

A&E Architects are the architects of record for the UM project, issuing construction documents, managing the LEED submittal process and overseeing the construction of the building as it relates to the design intent.

Cultural Design Elements

The Native American Center is shaped by four principal aspects: a primary eastern entry, a major central circular gathering space, preservation of an existing grove of trees on the site and day-lighting of the interior space.

The iconic tepee lodge of the Great Plains cultures became the principle concept of the building itself. It also was inspired by other traditional ceremonial structures of the region, including the sweat lodge and the sun dance lodge. The central entrance atrium and gathering space at the heart of the building is, like the tepee lodge, oriented to the east to honor the rising sun. The structure is an expressed frame in wood, the skin is translucent, the walls are canted and

it opens to the sky at its apex.

The design follows the long tradition of Native tribes to adapt to new materials and technologies. The wood structure is not lodgepole pine – it is timber-framed with glulam beams, an engineered wood product composed of small chips of wood that were not harvested from large or old-growth trees. The skin is not buffalo hide or canvas – it is multipane glass and a translucent, energy-efficient insulated fiberglass material called Kalwall.

The balance of the building, which wraps around the atrium, is a steel frame clad with structural insulated panels – a super-insulating building system that dramatically reduces energy needs for heating and cooling. The outer surface of the building is clad with an integral color cement panel that emulates stone and creates a durable, modern exterior that will complement the brick of the surrounding buildings.

Between the window bays, a relief panel will depict each of the tribal seals of the state's American Indian reservations. Along the entranceway plaza into the building from the east will be a structure that provides shade for a bench that lines the walkway. It is symbolic of the shade structures that traditionally accompany a tepee lodge. In the garden to the south of the entranceway, an outdoor storytelling area is planned with an oval bench supported by 12 large rocks with an entry from the east. The shape is symbolic of the sweat lodge.

The exterior of the structure is a 12-sided dodecagon. The sides are representative of the 12 tribes of Montana. Within the atrium is a true circle, formed by 12 log columns, reclaimed from the Milltown Dam east of Missoula, which creates a central ceremonial space for gatherings, ceremonies, traditional dances and powwows. The floor will be wood to

accommodate dancing and is laid out in a pattern depicting the medicine wheel based on a design from a Blackfeet war shirt.

The 12 logs support a study space for students, as well as a viewing space for events. The balcony is reached by a circular staircase that moves upward along the southern side of the gathering space in a clockwise direction to honor the tradition of clockwise movement within the tepee lodge around the central fire.

The floor is in stained concrete, with an edge pattern throughout the building based on traditional beadwork of the Salish, the original inhabitants of the region and symbolically the host of the building. In addition, rectangular areas of the floor are stained in tribally specific patterns emulating the painted parfleche, or buffalo hide containers, of the Plains tribes.

Seven Native gardens will represent each of the reservations in the state. The circular patterns will be marked by stones brought from each reservation and are the size and shape of tepee rings, symbolic of the Salish encampments that were once here. The gardens will be planted with traditional sacred plants used by Montana tribes.

Green Choices

A key aspect of Native philosophy that is shared by all tribes is a deep respect and integration with the natural world. As part of this effort, the design incorporates site strategies, building materials, building systems and construction processes that will reduce the environmental impacts of construction and create a building which is highly responsive to the climate of Montana.

Despite efforts to preserve all of the existing trees on site, five trees were removed for construction. The wood from these trees will be used within the building, ground up for mulch onsite, employed for research at UM's forestry college and used for log burning at UM's Native American Sweat Lodge.

The building was designed to enhance day-lighting and views. Materials for the project were selected based on their recycled content, their ability to be rapidly renewable and their regional availability. Flooring and trim will come from larch original to the site and potentially from trees blown down in a recent windstorm at UM's Flathead Lake Biological Station.

Gabion walls will be built of rock extracted from the site during excavation. The paints, adhesives and sealants feature low chemical emissions, and the composite wood products have no urea-formaldehyde.

New landscaping will include low-water-demand native plants. Low-flow/dual flush fixtures and waterless urinals will be used within the building to reduce water use. The building is cooled with groundwater drawn from the local aquifer – substantially reducing costs for cooling with this natural energy source.

Using state-of-the-art heating and cooling systems combined with the highly efficient building materials, the building is projected to use half the energy of a conventional building. The building has been modeled using Department of Energy software to determine projected energy use.

Sustainable Construction Strategies

The general contractor, Jackson Contractor Group, has previous experience with building to LEED standards. Their own office building was recently completed and will achieve the LEED gold certification. One of the indoor air quality requirements of LEED is to maintain a smoke-free environment within 25 feet of all building entries. During the construction process, Jackson will adopt this as a policy for the entire site.

Another policy established for the project through the LEED requirements and the goals of the University is to generate as little waste as possible during construction. Proper planning will reduce the generation of waste due to error, breakage, mishandling and contamination. Trash and waste will be reused, salvaged or recycled as much as possible to minimize disposal in landfills. The total quantity of waste diverted from the landfill will be tallied and documented.

Through teamwork, careful planning and clear goals, the faculty and students of the Department of Native American Studies will gain a building that represents their traditions and beliefs. References to history and culture will feature prominently. The reconnection to nature is an important, contemporary and progressive element in this building's design and development. By committing to the LEED process and sustainable design, UM reminds us we all have an important role in sustaining our environment.

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Construction progress can be followed on the project blog at **http://blog.umt.edu/nac/**.

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